Milestone 1

Problem Definition, Data Exploration, Proposed Approach

Problem Definition

- **Context - Why is this problem important to solve?**
  - Brief Introduction to the problem
  - Advantages of solving the problem
  - Good to add some facts and numbers to support your argument
- **Objectives - What is the intended goal?**
  - The goals you are trying to achieve.
  - Example - Reducing the attrition rate, Improving the lead conversion rate
  - There can be multiple goals

Problem Definition

- **The key questions - What are the key questions that need to be answered?**
  - Curating questions related to the problem that need to be answered
  - The burning questions or important insights you are planning to draw while solving the problem
- **The problem formulation - What is it that we are trying to solve using data science?**
  - Already explained the general form of the problem. Now, formulate the problem as a data scientist
  - How data science fits into the spectrum of solving the problem
  - The nature of the data science problem

Data Exploration

- **Data Description**
  - Background of the data and what is it about?
  - Information about the variables included in the data
- **Observations & Insights**
  - What are some key patterns observed in the data during EDA?
  - How do the key patterns affect/relate to the problem?
  - What are the data treatments or pre-processing steps required, if any?

Proposed Approach

- **Potential techniques**
  - What are the potential techniques/models that should be explored in the next step?
  - Why the techniques suggested are the best to explore for the data and problem at hand?
- **Overall solution design**
  - What is the potential solution design?
  - The steps (and substeps) that will be followed to solve the problem
- **Measures of success**
  - The key measures of success that will be used to compare potential techniques/models
  - Why the metric chosen is the best for the problem at hand?

Milestone 2

Refined Insights, Techniques' Comparison, Final Solution Design

Refined Insights

- List the most meaningful insights from the data relevant to the problem
- A meaningful insight has three components:
  - Good interpretation of the output from the data
  - Potential reason for that output
  - What it means for the problem/business?
- Not more than 1 page or slide

Comparison of Techniques and their Performances

- Try different techniques to solve the problem
- Compare the performance of different techniques based on the metric chosen for the problem
  - Which technique is performing relatively better?
  - Pros and cons of different techniques
  - Good to include a comparison table
- Is there scope to improve the performance further? If yes, how?

Proposal for the Final Solution Design

- **What model do you propose to be adopted?**
  - Based on the comparison, which is the best model for the problem?
  - Think of the tradeoff between model performance and model interpretability
- **Why is this the best solution to adopt?**
  - Reason for choosing the best model
  - How that solves the problem?

Final Submission

Executive Summary, Problem and Solution Summary, Recommendations

Executive Summary

- **What are the key takeaways?**
  - Identify and focus on the big picture first and all of its components
  - These components are usually the driving force for the end goal
  - Summarize the most important findings and takeaways in the beginning
- **What are the key next steps?**
  - Steps that can be taken to improve the solution
  - How to make the best of the solution?
  - What are the steps to be followed by the stakeholders?

Problem and Solution Summary

- **What problem was being solved?**
  - Summary of the problem
- **Final proposed solution design**
  - What are the key points that describe the final proposed solution design?
- **Why is this a 'valid' solution that is likely to solve the problem?**
  - The reason for the proposed solution design
  - How it would affect the problem/business?

Recommendations for Implementation

- What are some key recommendations to implement the solution?
- What are the key actionables for stakeholders?
- What is the expected benefit and/or costs?
    - List the benefits of the solution
    - Take some rational assumptions to put forward some numbers on costs/benefits for stakeholders
- What are the key risks and challenges?
    - What are the potential risks or challenges of the proposed solution design
- What further analysis needs to be done or what other associated problems need to be solved?

General Tips

Do's and Don'ts for a Good Project Report

Do's

- ✅ Focus must be on the business problem and solving the same by analyzing the data
- ✅ Follow the guidelines provided on LMS and by the Program Office
- ✅ Include only the important material in the main body. Appendix can contain codes and all less important tables, figures, etc.
- ✅ Adding codes and reference in the Appendix
- ✅ Easily readable tables, figures, and graphs. Work on the axis labels and legends
- ✅ Present all numbers up to 2 places of decimals only, unless required otherwise
- ✅ Highlight the innovations of the project and why the methods suggested there ought to be utilized by the industry

Don'ts

- ❌ Following this template word to word. This template is just to help you get started
- ❌ Presenting numbers and figures without the business interpretation and what it means for the problem
- ❌ Using any non-standard abbreviation in your report
- ❌ Filling the main body of the report with codes
- ❌ Screenshots of tables/charts from Python output
- ❌ Explaining theory of the techniques in the project report
- ❌ Using very large fonts and/or adding unnecessary visuals
- ❌ Including too much content on a single slide

Project Report VS Live Presentation